UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,821	08/21/2003	Naoto Yamano	YAMA3008/JEK	6178

23364 7590 05/09/2005

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314

EXAMINER	
ROGERS, DAVID A	
ART UNIT	**PAPER NUMBER**
2856	

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,821	YAMANO ET AL.	
	Examiner	Art Unit	
	David A. Rogers	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-13 and 15* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892).
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Final Rejection*.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 19 April 2005 have been fully considered but they are not persuasive. The applicant argues that the prior art does not teach a lead-in tube, a detector, and the aspirator arranged in a substantially linear alignment. As noted below the combined teachings of the admitted prior art and Smith teach such an arrangement.

Specification

2. The disclosure is objected to because of the following informalities. The specification and the claims make reference to a lead-in tube connected to the aspirator using an expanded part. See, for example, claim 8. The disclosure and the claims also make reference to the use of a "connection part" for interconnecting the lead-in tube to the expanded part. See, for example, claim 9. The applicant's terminology is confusing, and would lead one to believe that there are three total parts (the lead-in tube, the connection part, and the expanding part). However, a review of the specification and drawings suggest that only two parts are provided (the lead-in tube and the expansion part).

It is requested that the applicant amend the specification and the claims in order to clarify that only two parts are provided. Claim 9, for example, should state that the lead-in tube is connected to the aspirator via an expanding part wherein said expanding part has a smoothly contoured surface.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of United States Patent 3,794,909 to Smith and United States Patent 6,585,791 to Garito *et al.*

The admitted prior art, shown as figure 13 in the application, is a smoke detection system comprising a lead-in tube (reference item 103a) and an aspirator (reference item 108) positioned downstream of an optical smoke sensor (reference item 104). The lead-in tube and the optical detector are formed a linear arrangement so that particle laden air moving though the lead-in tube will pass through the detector and then to the aspirator. The optical sensor is shown in figure 11 of the application. The aspirator forms the actuator mechanism as a rotating part that sucks air through the lead-in tube and then discharges the air. The lead-in tube, as shown, forms a bend prior to being connected to the aspirator.

The admitted prior art does not expressly teach a straight lead-in tube. Repositioning the prior art aspirator by a 90° rotation is an obvious modification. See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the

particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). In fact, the applicant makes no mention or argument, nor provides any intrinsic evidence that shows that it would be impossible or otherwise wholly impermissible to have the aspirator relocated at 90° in the prior art. It would appear that the prior art aspirator is placed in a preferred position for convenience, e.g., for use in a narrow enclosure.

However, in the event that is not obvious to reposition the aspirator to provide a straight lead-in tube, Smith teaches such an apparatus. In Smith a particle detector comprises a lead-in tube (reference item 24) coupled to a suction unit (aspirator) (reference item 42). The lead-in duct and the suction device are oriented substantially on the same axis.

Furthermore, it is known that bent conduits are prone to particle collection on their inner surface due to impingement with the inner surface. Removal of the bent portion of the lead-in tube of the admitted prior art would eliminate the region where particles (dust, debris, smoke, etc.) tend to accumulate. Particles that accumulate and are subsequently dislodged at a later period may give a false indication of a problem when sensed by the downstream particle detector.

The admitted prior art also does not expressly teach a lead-in tube connected to the aspirator via an expanded part. Garito *et al.* teaches a suction apparatus for pulling smoke from a region. The apparatus comprises a

suction motor (reference item 20) and an inlet tube (reference item 16). The inlet tube is connected to the apparatus using a continuously-expanding part, as seen in figures 1 and 2. The combination inlet tube and expanding part are formed as a single integral piece structure. One of ordinary skill in the art would select a connecting member that allowed the entire inlet to the aspirator to be covered, i.e., attached so that there are no air leaks. Furthermore, the use of a relatively small diameter lead-in tube (as shown in the admitted prior art and in Garito *et al.*) increases the suctioning power. This would allow the device of the admitted prior art of Garito *et al.* to pull more air using a smaller aspirator.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art with the teachings of Smith and Garito *et al.* to provide a smoke detector comprising an aspirator connected to a straight lead-in tube via an expanding connector.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the admitted prior art, alone or in view of Smith, to provide a lead-in tube with no bends that is substantially on the same axis as an aspirator.

5. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and

Garito *et al.* as applied to claim 8 above, and further in view of United States Patent Application Publication 2003/0131891 to Sinur *et al.*

The admitted prior art in view of Smith and Garito *et al.* teaches an inlet tube for pulling air containing smoke using an aspirator (vacuum/suctioning device). As seen in figure 2 of Garito *et al.* the expanding part is connected to the tube using a continuously expanding connector (no numbered). The applicant's admitted prior art in view of Smith and Garito *et al.* does not expressly teach a continuously smooth curved inner surface.

The forming of a continuously smooth inner surface is a matter of design choice. Also, Sinur *et al.* teaches a connecting member comprising walls (reference items 142 and 146). As seen in figure 18 there is a continuously smooth inner surface. Furthermore, Sinur *et al.* teaches that all four walls can be formed of curved sections, which would provide a substantially semispherical inner surface. Sinur *et al.* teaches that these types of surfaces/surface transitions are beneficial in that they reduce turbulence and noise.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art in view of Smith and Garito *et al.* with the teachings of Sinur *et al.* to provide a connecting member with a continuously smooth inner surface.

6. Claims 11, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and

Garito *et al.* as applied to claims 8 and 9 above, and further in view of Japanese Laid Open Patent Application JP 10267803A to Iwai.

The applicant's admitted prior art in view of Smith and Garito *et al.* teaches the use of an inlet tube for drawing air from a region using an aspirator. With regard to claim 15 Garito *et al.* teaches the use of a single piece structure for the inlet tube (reference item 16) and the expanding part (not numbered). The expanding part includes a continuously smooth surface. The applicant's admitted prior art in view of Smith and Garito *et al.* does not teach the use of a flow restriction region in the inlet tube.

Iwai teaches an apparatus for drawing air using an aspirator (reference item 31). The apparatus comprises inlet tubes (reference items C11 and C12. Within each inlet tube is a flow restriction member (reference items 11 and 12). It is taught that the flow restricting devices help adjust the flow rates of air in the inlet tubes. It would appear from figure 2 that the diameter of the aperture is between 30% to 70% of the inside diameter of the tube.

The choice of a preferred diameter of the aperture of the flow restriction device, being 30% to 70% of the inlet tube's diameter, is a matter of design choice and would depend on the desired flow rate after the restriction device. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed.Cir.1984), *cert. denied* ,469 U.S.830,225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a

device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the applicant's admitted prior art in view of Smith and Garito *et al.* with the teachings of Iwai to provide a flow restriction device in the inlet tube.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Smith and Garito *et al.* as applied to claims 8 and 9 above, and further in view of United States Patent Application Publication 2003/0077174 to Kim.

Claim 13 merely describes the use of a normal centrifugal fan/pump (aspirator). The applicant's admitted prior art, as seen in figure 13, shows an aspirator, although not positioned on its side. Repositioning the fan to be on its side it mere relocation of the known parts of the prior art. The fan of the known prior art more than likely has a continuously smooth inner discharge surface. Furthermore, centrifugal aspirators are also widely used in the prior art. See figures 1 and 2 of Kim. In Kim one can clearly seen the continuously smooth inner surface of the discharge portion.

See also MPEP §2144.08 and *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were

hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of the admitted prior art in view of Smith and Garito *et al.* with the teachings of Kim to provide a smoke detector comprising a centrifugal fan with a continuously smooth inner discharge surface.

Allowable Subject Matter

8. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

dar
02 May 2005